In the Claims:

Claim 1 (Previously Presented): A method of reducing a quantization distortion created by quantization of a speech signal by a sample-by-sample quantizer, the speech signal including a plurality of frames, the method comprising:

detecting that one frame of the plurality of frames was previously quantized;

determining a quanitzation level for each of a plurality of samples of the one frame;

estimating an expected quantization distortion for each of the plurality of samples based on the quantization level of each of the plurality of samples;

summing up the expected quantized distortion of each of the plurality of samples to generate a summed quantization distortion; and

removing the summed quantization distortion from the frame.

Claim 2 (Previously Presented): The method of claim 1, wherein the determining includes using quantization indices to determine the quantization levels.

Claim 3 (Previously Presented): The method of claim 2, wherein the quantization indices are obtained by analyzing the frame to determine a type of the sample-by-sample quantizer and requantizing the frame.

Claim 4 (Cancelled)

Claim 5 (Original): The method of claim 1 where the reduction of the quantization distortion is part of the pre-processing of the signal prior to encoding.

Claim 6 (Original): The method of claim 1 where the reduction of the quantization distortion is part of the post-processing of the signal following decoding.

Claim 7 (Previously Presented): The method of claim 1, wherein the removing is performed in the frequency domain.

Claim 8 (Previously Presented): The method of claim 1, wherein the removing is performed in the time domain.

Claim 9 (Currently Amended): A method of reducing quantization distortion created by a sample-by-sample quantizer, the method comprising:

(a) ~~estimating an expected quantization distortion for each of a plurality of quantization levels~~ determining quantization levels of a frame of a previously quantized signal;

(b) estimating an expected quantization distortion for each of the quantization levels;

(c) summing the expected quantization distortion for the frame of the previously quantized signal; and

(d) removing the expected quantization distortion from the frame.

Claim 10 (Currently Amended): The method of claim 9 where (~~a~~ b) further comprises determining the distribution of the signal quantized to each of the quantization levels and storing the expected quantization distortion in a distortion table.

Claim 11 (Original): The method of claim 9 where (c) further comprises assuming a magnitude spectrum of the expected quantization distortion is flat and assuming a phase spectrum of the expected quantization distortion is the same as the signal.

Claim 12 (Currently Amended): The method of claim 9 further comprising ~~(e)~~ initially determining if a signal has been subject to quantization by the sample-by-sample quantizer.

Claim 13 (Currently Amended): The method of claim 12 further comprising ~~(f)~~ executing the remainder of the method if the signal has been subject to quantization by the sample-by-sample quantizer.

Claim 14 (Currently Amended): The method of claim 12 further comprising ~~(f)~~ determining a type of sample-by-sample quantization.

Claim 15 (Currently Amended): The method of claim 9 where (~~b~~ a) further comprises quantizing the signal with a sample-by-sample quantizer prior to determining the quantization levels.

Claim 16 (Original): The method of claim 9 where (d) further comprises removing the expected quantization distortion in the frequency domain.

Claim 17 (Original): The method of claim 9 where (d) further comprises removing the expected quantization distortion in the time domain.

Claim 18 (Currently Amended): A method of estimating quantization distortion for a frame of a signal that has been quantized using sample-by-sample quantization, the method comprising:

(a) determining the distribution of the signal within a plurality of quantization levels;

(b) estimating an expected quantization distortion for each of the quantization levels based on the distribution; ~~and~~

(c) determining an expected quantization distortion for the frame as a function of the expected quantization distortion of each of the quantization levels;

(d) determining a phase spectrum of the expected quantization distortion of the frame.

Claim 19 (Currently Amended): The method of claim 18 further comprising (~~d~~ e) determining a spectral shape of the expected quantization distortion of the frame as a function of an error criterion used during the sample-by-sample quantization.

Claim 20 (Currently Amended): The method of claim 19 further comprising (~~e~~ f) approximating the spectral shape of the expected quantization distortion of the frame as flat.

Claim 21 (Cancelled)

Claim 22 (Currently Amended): The method of claim ~~21~~ 18 further comprising (e) assuming that the phase spectrum of the expected quantization distortion of the frame is equal to the phase spectrum of the frame.

Claim 23 (Original): The method of claim 18 where (b) further comprises determining an upper boundary and a lower boundary for each of the quantization levels.

Claim 24 (Original): A method of reducing the quantization distortion created during quantization of a signal by a sample-by-sample quantizer, where a frame of the signal comprises a plurality of samples that are quantized to one of a plurality of quantization levels by the sample-by-sample quantizer, the method comprising:

(a) receiving the frame of the signal;

(b) identifying the quantization level of each of the samples;

(c) obtaining the expected quantization distortion of each of the samples;

(d) summing the expected quantization distortion of each of the quantization levels of the frame; and

(e) removing the sum of the expected quantization distortion from the frame.

Claim 25 (Currently Amended): The method of claim 24 further comprising ~~(f)~~ initially determining if the frame was previously quantized.

Claim 26 (Original): The method of claim 24 where (a) comprises receiving the signal with a base station.

Claim 27 (Original): The method of claim 24 where (a) comprises receiving the signal with a mobile communication device.

Claim 28 (Original): The method of claim 24 where (a) comprises receiving the signal with a public switched telephone network.

Claim 29 (Original): The method of claim 24 where (a) comprises receiving the signal from a communication medium.

Claim 30 (Original): The method of claim 24 where (a) comprises receiving the signal with a packet-based network.

Claim 31 (Original): The method of claim 24 where (c) further comprises determining a distribution of the samples within the quantization levels.

Claim 32 (Original): The method of claim 24 where (d) further comprises determining a magnitude spectrum of the expected quantization distortion, and determining a phase spectrum of the expected quantization distortion.

Claim 33 (Original): The method of claim 24 where the quantization levels are obtained from the signal without additional processing.

Claim 34 (Original): The method of claim 24 where (b) further comprises re-quantizing the signal.

Claim 35 (Original): The method of claim 24 where (c) further comprises retrieving the expected quantization distortion from a distortion table.

Claim 36(Original): The method of claim 24 where (e) further comprises removing the expected quantization distortion in the frequency domain.

Claim 37 (Original): The method of claim 24 where (e) further comprises removing the expected quantization distortion in the time domain.

Claim 38 (Original): A distortion removal system for a frame of a signal that includes quantization distortion resulting from the frame being previously quantized to a plurality of quantization levels by a sample-by-sample quantizer, the distortion removal system comprising:

a distortion identification module operable to identify an expected quantization distortion for each of the quantization levels in the frame;

a summer module operable to sum the expected quantization distortion; and

a distortion removal module operable to remove the summed expected quantization distortion.

Claim 39 (Original): The distortion removal system of claim 38 further comprising an initial processing module operable to determine and provide the quantization levels to the distortion identification module.

Claim 40 (Original): The distortion removal system of claim 39 where the initial processing module further comprises a sensing module and a quantization module.

Claim 41 (Original): The distortion removal system of claim 38 where the distortion identification module comprises a distortion determination module and a distortion table.

Claim 42 (Original): The distortion removal system of claim 38 where the distortion removal system is operable to pre-process the signal prior to encoding.

Claim 43 (Original): The distortion removal system of claim 38 where the distortion removal system is operable to post-process the signal following decoding.

Claim 44 (Original): The distortion removal system of claim 38 where the distortion removal module is operable to remove the expected quantization distortion in the frequency domain.

Claim 45 (Original): The distortion removal system of claim 38 where the distortion removal module is operable to remove the expected quantization distortion in the time domain.